In another (fig. C, *l*) the point of the anterior blade passes just behind the apex of the lobe. In a third the blade slides altogether behind the lobe, so that the latter practically reaches the posterior cusp of the last premolar, blocking the space between it and the carnassial, as is typically the case in species of Felidæ in which the lobe of the upper carnassial is well developed (fig. D, *l*).

Fronto-squamosal Junction.

In a series of twelve skulls of *F. bengalensis* the frontal bone is separated from the squamosal by a bridge formed by a downward process from the parietal meeting the upper end of the alisphenoid. This appears to be the general rule in the Felidæ. In an example of *F. manul,* however, the parietal is excluded from the alisphenoid by the junction of the frontal with the squamosal. One would, perhaps, be inclined to regard this character as a useful and reliable systematic point, were it not that in *F. sylvestris* the junction of the bones at this point is a highly variable feature. Sometimes there is a tolerably broad parieto-alisphenoid bridge between the frontal and squamosal. At other times the bridge is quite narrow ; at others it is obliterated altogether by the union of the frontal and squamosal.

XXXI.—*Notes on Fossorial Hymenoptera.*—XXIII. *On some Australian Genera.* By Rowland E. Turner, F.Z.S., F.E.S.

Family **Crabronidæ.**

Subfamily *Philanthinæ.*

Cerceris gilberti, sp. n.

♀. Nigra; mandibulis basi, clypeo, scapo, fronte sub antennis, macula magna pone oculos, pronoto macula magna utrinque, tegulis, scutello linea transversa, postscutello pedibusque flavis; flagello, segmentis dorsalibus secundo basi, tertio quintoque, segmentisque ventralibus secundo, tertio, quinto sextoque brunneo-auriantiacis; clypeo lamina libera, porrecta, brevi, apice emarginata; mesopleuris haud dentatis; segmento mediano area basali

basi oblique striata; alis hyalinis, apice leviter infumatis, venis fuscis, stigmate testaceo.
Long. 10 mm.

♀. Clypeus with the lamina free from the base, short and broadly emarginate at the apex; the apical margin of the clypeus below the lamina broadly truncate. The whole dorsal surface and the mesopleuræ closely and rather coarsely punctured; antennæ inserted about half as far again from the anterior ocellus as from the base of the clypeus; second joint of the flagellum slightly longer than the third. Pronotum rounded at the anterior angles; enclosed area of the median segment obliquely striated at the base, opaque, and microscopically punctured at the apex. First abdominal segment more than half as broad again as long; pygidial area twice as long as broad, broadly truncate at the apex, the sides almost parallel.

Hab. Mackay, Q. (*G. Turner*).

One female only.

I had overlooked this species until lately, though the specimen has been in my collection for many years. It is nearly allied to *C. opposita*, Sm., but differs much in colour; the lamina of the clypeus is broader and more deeply emarginate; the striation of the enclosed area of the median segment is confined to the basal half; the petiole is narrower and the pygidial area much broader.

Subfamily *Apiactinæ*.

Miscothyris perlucidus, sp. n.

♀. Nigra; mandibulis basi, clypeo, pronoto, mesopleuris macula sub alis, scutello macula magna, postscutello fascia transversa, segmento dorsali secundo fascia angusta apicali lateribus dilatata, segmentisque dorsalibus 3–5 fascia angusta apicali flavis; flagello apice infuscato, tegulis, callis humeralibus, pygidio, femoribus apice, tibiis tarsisque brunneo-testaceis; alis hyalinis, leviter infumatis, venis fuscis.

♂. Feminæ similis; segmento dorsali sexto apice flavo-fasciato; septimo flavo.

Long., ♀ 7 mm., ♂ 5-6 mm.

♀. Eyes strongly converging towards the base of the antennæ, thence diverging again towards the clypeus; separated at the base of the antennæ by a distance about equal to the length of the scape. Clypeus very broadly truncate at the apex, more than twice as broad at the apex as long, very

strongly narrowed to the base, minutely punctured. Second joint of the flagellum slightly longer than the third ; the first stout and globular, more than half as long as the second. Posterior ocelli very far apart, at least three times as far from each other as from the eyes, separated from the eyes by a distance about equal to the diameter of one ocellus ; the facets of the eyes very large in front, smaller on the sides. Head and thorax subopaque, microscopically punctured ; median segment smooth and shining, the basal area well defined, the posterior slope divided by a longitudinal sulcus. Abdomen subopaque, minutely punctured ; second ventral segment shining, with a few large and scattered punctures ; pygidial area closely clothed with stiff fulvous setæ. Third abscissa of the radius about half as long again as the second ; first recurrent nervure received by the first cubital cell at a distance from the apex equal to about half the length of the second abscissa of the radius ; second recurrent nervure received just before the apex of the second cubital cell, strongly bent inwards towards the cubitus. Hind tibiæ feebly serrate.

♂. The eyes are distinctly further apart at the base of the antennæ than in the female.

Hab. Kuranda, N. Queensland (*F. P. Dodd*).

This is nearly allied to *lucidulus*, Turn., from the same locality, but is a smaller species, with many more yellow markings and differently coloured legs. The second abscissa of the radius is shorter in *lucidulus* and the first recurrent nervure is received nearer to the apex of the first cubital cell. The punctures are more minute than in *duboulayi*, Turn., which is also very closely allied.

Subfamily *Larrinæ*.

Key to the Australian Species of Notogonia.

♀♀.

1.	Eyes separated on the vertex by a distance fully equal to the length of the scape ; tarsal ungues not unusually long	*N. australis*, Sauss.
	Eyes separated on the vertex by a distance not exceeding three-quarters of the length of the scape, usually much less ; tarsal ungues unusually long ..	2.
2.	Dorsal surface of the median segment coarsely reticulate	*N. retiaria*, Turn.

	Sculpture of the dorsal surface of the median segment almost obsolete, sometimes with indistinct transverse striæ.	3.
3.	Median segment with a longitudinal sulcus on the dorsal surface; the lateral and posterior margins not sharply defined	*N. abbreviata*, Turn.
	Dorsal surface of the median segment without a sulcus, the margins sharply defined	4.
4.	Comb of the fore tarsi long, the spines strongly spatulate	*N. spathulifera*, Turn.
	Comb of the fore tarsi short	5.
5.	The whole mesonotum densely clothed with golden pubescence	*N. chrysonota*, Sm.
	Pubescence of the mesonotum sparse, except on the sides, not golden	6.
6.	Wings with a broad fuscous fascia across the middle, the apex also fuscous, leaving a hyaline lunule; the fuscous band sometimes extending to the base.	*N. regina*, Turn.
	Wings fusco-hyaline or hyaline	7.
7.	Fourth abscissa of the radius distinctly shorter than the second and third combined: apical truncation of the radial cell broad, oblique or straight.	8.
	Fourth abscissa of the radius at least as long as the second and third combined; apical truncation of the radial cell narrower, never oblique	9.
8.	Truncation of the radial cell oblique; distance between the recurrent nervures on the cubitus almost equal to the second abscissa of the radius	*N. obliquetruncata*, Turn.
	Truncation of the radial cell straight; recurrent nervures almost meeting on the cubitus	*N. recondita*, Turn.
9.	Second joint of the flagellum distinctly shorter than the third; apical joint of the tarsi ferruginous	*N. agitata*, Turn.
	Second joint of the flagellum at least equal to the third; apical joint of the tarsi never ferruginous above	10.
10.	The depression on the middle of the anterior margin of the mesonotum very broad, extending posteriorly beyond the middle of the segment	*N. serena*, Turn.
	The depression on the middle of the anterior margin of the mesonotum not very broad; not nearly reaching the middle of the segment	11.
11.	Distance between the eyes on the vertex not more than half as great again as the length of the first joint of the flagellum; median segment no longer	

than its basal breadth; wings fusco-hyaline ..... *N. commixta*, Turn.
Distance between the eyes on the vertex equal to twice the length of the second joint of the flagellum; median segment longer than its basal breadth; wings subhyaline..... *N. basilissa*, Turn.

1. *Notogonia australis*, Sauss.

Tachytes australis, Sauss. Mem. soc. phys. & hist. nat. Genève, xiv. p. 19 (1854). ♀ (nec 1867).
Larrada australis, Sauss. Mélang. Hymén. ii. p. 69 (1854).
Larra australis, Turn. Proc. Zool. Soc. London, p. 474 (1908); Turn. Ann. & Mag. Nat. Hist. (8) xv. p. 554 (1915).
Notogonia australis, Turn. Ann. & Mag. Nat. Hist. (8) xvii. p. 251 (1916).

This interesting species approaches *Larra* in the short tarsal ungues and sparse pubescence of the pygidial area, also in the characters of the head; but otherwise it has the characters of *Notogonia*, and is best placed in that genus.

Hab. Eaglehawk Neck, Tasmania (*Turner*); Adelaide, S.A.; Yallingup, W.A. (*Turner*).

2. *Notogonia abbreviata*, Turn.

Notogonia abbreviata, Turn. Proc. Zool. Soc. London, p. 481 (1908).

Easily distinguished by the median segment, which is not margined laterally or apically, and has a median sulcus on the dorsal surface. The incision of the mandibles is much less distinct than in typical *Notogonia*, approaching *Liris*.

Hab. Cairns and Mackay, Q. (*Turner*).

3. *Notogonia retiaria*, Turn.

Notogonia retiaria, Turn. Proc. Zool. Soc. London, p. 479 (1908). ♀.

The median segment of this little species has the dorsal surface coarsely reticulate; the third cubital cell is also much less produced on the cubitus than in most species of the genus. Allied to the Indian *N. reticulata*, Cam.

Hab. Kalamunda, W.A. (*Turner*), April; Kuranda, Q. (*Turner*), June.

4. *Notogonia regina*, Turn.

Notogonia regina, Turn. Proc. Zool. Soc. London, p. 475 (1908). ♀.

Easily distinguished by the very broad fuscous fascia and apical margin of the fore wing, a hyaline lunule being left occupying the apical half of the radial cell, the third cubital cell, and a large part of the area beyond the cells. The female has orange antennæ. In a specimen from Cape York the whole fore wing except the lunule is fuscous.

Hab. Mackay, Q. (*Turner*); Kuranda, Q. (*Turner*); Cape York, Q. (*Turner*).

5. *Notogonia spathulifera*, sp. n.

♀. Nigra; argenteo-pubescens; alis fusco-hyalinis; tarsis anticis spinis longis spatulatis instructis.
Long. 16 mm.

♀. Clypeus closely microscopically punctured, with a few large punctures near the apex, slightly convex, clothed rather sparsely with very pale golden pubescence, which extends on the front as far as the anterior ocellus. Second and third joints of the flagellum subequal; the eyes separated on the vertex by a distance exceeding the length of the second joint of the flagellum. Mesonotum broadly depressed in the middle of the anterior margin, the depression extending beyond the middle of the segment, which is closely microscopically punctured and clothed on the sides with very pale golden pubescence. Median segment a little longer than its basal breadth, the sides somewhat depressed, but distinctly margined, the depressed portion rather strongly transversely striated, the striæ not extending on to the flat dorsal surface, but extending over the lateral carinæ on to the sides of the segment, where they become much more delicate and indistinct; the depressed lateral portions of the dorsal area clothed with silver pubescence; the posterior truncation abrupt, the surface transversely striated on the sides, and with a deep median sulcus. The four basal dorsal segments of the abdomen with broad apical fasciæ of silver pubescence; pygidial area closely and rather strongly punctured, clothed with dull pubescence which in some lights shows silver, the lateral margins well defined, strongly convergent towards the apex, which is very narrowly truncate. Third abscissa of the radius twice as long as the second, the fourth considerably longer than the second and third combined; the distance

between the recurrent nervures on the cubitus equal to the second abscissa of the radius.

Hab. Port Darwin, N.T. (*G. F. Hill*) ; Bathurst Island, N.T. (*Dodd*).

This closely resembles *N. serena*, Turn., superficially, but may be easily distinguished by the long spatulate spines of the fore tarsi and by the much narrower pygidial area.

6. *Notogonia chrysonota*, Sm.

Larrada chrysonota, Sm. Trans. Ent. Soc. London, p. 304 (1869). ♀.
Larrada crassipes, Sm. Ann. & Mag. Nat. Hist. (4) xii. p. 294 (1873).
Notogonia chrysonota, Turn. Proc. Zool. Soc. London, p. 475 (1908).

Hab. Champion Bay, W.A. (*Du Boulay*) ; Adelaide, S.A.

7. *Notogonia serena*, Turn.

Notogonia serena, Turn. Proc. Zool. Soc. London, p. 478 (1908). ♀.

Nearly related to *spathulifera*, but differs in the short spines of the fore tarsus and in the much broader pygidial area. This is one of the commonest species of the genus in North Queensland.

Hab. Mackay and Cairns, Q.

8. *Notogonia obliquetruncata*, Turn.

Notogonia obliquetruncata, Turn. Proc. Zool. Soc. London, p. 479 (1908). ♀.

The truncation of the radial cell is oblique and broad, making the cell shorter than in the other species. The depression on the median segment does not reach the middle.

Hab. Port Darwin (*Turner*) ; Yallingup, W.A. (*Turner*).

9. *Notogonia commixta*, Turn.

Notogonia commixta, Turn. Proc. Zool. Soc. London, p. 480 (1908). ♀.

The abdominal fasciæ are more obscure than in the most nearly allied species. It is a fairly common species at Kuranda.

Hab. Kuranda, Q. (*Turner*), February to July.

10. *Notogonia basilissa*, Turn.

Notogonia basilissa, Turn. Proc. Zool. Soc. London, p. 476 (1908). ♀.

The type has the apical joints of the antennæ orange, but I think that this is an aberration; other specimens apparently of the same species have the antennæ wholly black.

Hab. Mackay and Cairns, Q. (*Turner*).

11. *Notogonia agitata*, Turn.

Notogonia agitata, Turn. Proc. Zool. Soc. London, p. 477 (1908). ♀.

This has the second joint of the flagellum distinctly shorter than the third; it is a smaller species than the two last, but is very closely allied.

Hab. Mackay, Q. (*Turner*).

12. *Notogonia recondita*, sp. n.

♀. Nigra, albido-pubescens; tarsis articulo apicali ferrugineo; segmentis dorsalibus 1–4 fascia lata apicali sordide albo-pubescente; alis subhyalinis, venis ferrugineis; tegulis testaceis.

♂. Feminæ similis; tarsis articulo apicali fusco.

Long., ♀ 8–9 mm., ♂ 6·5 mm.

♀. Clypeus and front closely clothed with silver pubescence; the clypeus minutely punctured, subcarinate longitudinally in the middle; the apical margin transverse, smooth and shining. Second and third joints of the flagellum subequal; the eyes separated on the vertex by a distance about equal to the length of the second joint of the flagellum. Pronotum scarcely depressed below the mesonotum, higher in the middle than at the sides, obliquely sloped anteriorly. Median depression of the anterior margin of the mesonotum almost obsolete; the apical angles clothed with whitish pubescence. Median segment longer than the basal breadth; the dorsal surface finely granulate, with an almost obsolete median carina, and a few short transverse striæ near the apical angles; abruptly truncate posteriorly, the surface of the truncation finely transversely striate, with a deep median sulcus. Pygidial area long and narrow, very narrowly truncate at the apex, shining, with large scattered punctures, almost entirely without pubescence. Comb of the fore tarsi short. Radial cell broadly truncate at the apex; the third abscissa of the radius at least half as long again as the

second, the two combined much longer than the fourth ; the recurrent nervures almost meeting on the cubitus.

Hab. Mackay, Q. (*Turner*), November to March ; Kuranda, Q. (*Turner*), May.

This belongs to the group of small species with a broadly truncate radial cell and a short fourth abscissa of the radius, to which *N. obliquetruncata* also belongs. From that species it is separated by the straight apical margin of the radial cell, by the shorter second abscissa of the cubitus, by the greater approximation of the recurrent nervures, and by the much narrower pygidial area. In *obliquetruncata* the sides of the pygidial area diverge strongly towards the base, but only slightly in the present species ; the surface of the area is bare throughout in the present species, only on the basal half in *obliquetruncata*. This is the Australian form of the wide-ranging *N. pompiliformis*, Costa.

Lyroda queenslandensis, sp. n.

♂. Niger; scapo subtus tegulisque testaceis ; mandibulis basi, abdomine segmentis primo secundoque, tibiis, tarsis anticis, tarsisque intermediis et posticis hic illic infuscatis, ferrugineis ; alis hyalinis, venis ferrugineis.

Long. 6 mm.

♂. Clypeus short and broad, minutely punctured and clothed with silver pubescence, with a distinctly longitudinal carina, the apical margin feebly excised in the middle. Head opaque, not visibly punctured, a very delicate frontal sulcus reaching the anterior ocellus. Second joint of the flagellum equal to the third, twice as long as the first. Inner margins of the eyes parallel, the posterior ocelli as far from the eyes as from each other. Thorax opaque, minutely and closely punctured ; a transverse, crenulate, impressed line at the base of the scutellum, the latter less opaque than the mesonotum. Median segment a little shorter than the basal breadth, slightly narrowed to the apex, very finely granulate, with a distinct median carina ; the sides of the segment very closely and minutely striato-punctate ; the surface of the posterior truncation rather coarsely transversely striated, with a shallow median sulcus. Abdomen shining, microscopically punctured ; dorsal segments 1–4 with an apical band of very short and sparse white pubescence. Third abscissa of the radius distinctly longer than the second, the third cubital cell less than twice as long on the cubitus as on the radius ; first recurrent nervure interstitial with the first transverse cubital

nervure, second received close to the middle of the second cubital cell.

Hab. Bundaberg, Q. (*Perkins*).

This is near *formosa*, Sm., an Indo-Malayan species, but differs in the colour of the legs and scape. It differs widely from the other Australian species *L. michaelseni*, Schulz, both in colour and the sculpture of the median segment, also in the position of the recurrent nervures and the shape of the third cubital cell.

Subfamily *Nitelinæ*.

Key to the Australian Genera.

1. Radial cell appendiculate; first transverse cubital nervure oblique, almost interstitial with the recurrent nervure; pronotum short, the dorsal surface transverse	*Nitela*, Latr.
Radial cell without an appendix; first transverse cubital nervure joining the radius at right angles, the recurrent nervure received far before the end of the cubital cell; pronotum long, produced and narrowed anteriorly	*Auchenophorus*, Turn.

Key to the Australian Species of Nitela.

1. Legs entirely ferruginous.....	2.
Legs almost entirely black	*N. australiensis*, Schulz.
2. Mesonotum coarsely transversely striate-reticulate	*N. reticulata*, Turn.
Mesonotum opaque, the sculpture indistinct and fine	*N. kurandæ*, Turn.

1. *Nitela australiensis*, Schulz.

Nitela australiensis, Schulz, Fauna Südwest Australiens, i. xiii. p. 483 (1908).

Nitela nigricans, Turn. Trans. Ent. Soc. London, p. 428 (1910).

I do not think, after an examination of specimens from different localities, that these can be separated. The species has a very wide range in Australia, and may be found on dead *Eucalyptus* trees which have been attacked by small beetles, in the holes of which the *Nitela* probably forms its nest. Tasmanian specimens differ slightly, having the posterior ocelli further from the eyes than in the typical form, but they are not typical *nigricans*.

Hab. Yallingup, W.A. (*Turner*) ; Bundaberg, Q. (*Perkins*) ; Kuranda, Q. (*Turner*) ; Eaglehawk Neck, Tasmania (*Turner*).

2. *Nitela kurandæ*, Turn.

Nitela kurandæ, Turn. Proc. Zool. Soc. London, p. 508 (1908). ♀.

Hab. Kuranda, Q. (*Turner*), January to June ; Bundaberg, Q. (*Perkins*) ; Caloundra, Q. (*Hacker*), September.

3. *Nitela reticulata*, Turn.

Nitela reticulata, Turn. Proc. Zool. Soc. London, p. 508 (1908). ♀.

This is easily distinguished from other Australian species by the coarse sculpture of the mesonotum. It appears to be much more uncommon than the others, as I have only seen the type.

Hab. Mackay, Q. (*Turner*), May.

Key to the Species of Auchenophorus.

1. Thorax, median segment, and abdomen entirely blue-green or blackish	2.
Prothorax, mesonotum, and three basal abdominal segments ferruginous red, the remainder of the thorax and abdomen and the median segment blue	*A. coruscans*, Turn.
2. Enclosed area of the median segment triangular ; median segment and abdomen blue-green ; radial cell on the costa scarcely longer than the stigma, receiving the transverse cubital nervure close to the middle..	*A. æneus*, Turn.
Enclosed area of the median segment broadly rounded at the apex ; median segment and abdomen, except the ferruginous apical segment, blackish ; radial cell on the costa much longer than the stigma, receiving the transverse cubital nervure far beyond the middle	*A. fulvicornis*, Turn.

1. *Auchenophorus coruscans*, Turn.

Auchenophorus coruscans, Turn. Ann. & Mag. Nat. Hist. (7) xix. p. 271 (1907). ♀.

This beautiful species is the type of the genus, and is easily distinguished by the colouring. The pronotum is somewhat longer and much more convex than in the other species ; the

neuration is similar to that of *æneus*, but the radial cell is a little longer.

Hab. Mackay, Q. (*Turner*), October and November.

2. *Auchenophorus æneus*, Turn.

Auchenophorus æneus, Turn. Ann. & Mag. Nat. Hist. (7) xix. p. 271 (1907), ♀.

Hab. Mackay, Q. (*Turner*), February; Kuranda, Q. (*Turner*), January.

3. *Auchenophorus fulvicornis*, Turn.

Auchenophorus fulvicornis, Turn. Ann. & Mag. Nat. Hist. (7) xix. p. 272 (1907). ♂.

The female is much larger than the male, measuring 10 mm. in length, and is of more robust build than the other species. The enclosed area of the median segment is very coarsely longitudinally striated. The colouring is more obscure in the female than in the male. When the wings are closed this species closely resembles *Ephutomorpha impressiventris*, André, and other similarly coloured Mutillidæ, with which it is found running on the ground.

Hab. Kuranda, Q. (*Turner*), January.

XXXII.—*Rhynchotal Notes.*—LXI. By W. L. Distant.

Homoptera.

Fam. Membracidæ (continued from p. 44).

Telingana recurvata, sp. n.

Head and pronotum black; a marginal frontal fascia on each side of pronotum beneath the bases of the lateral processes, suffusions to face, narrow basal margins of pronotum, and the scutellum greyishly tomentose; body beneath and legs black, posterior tibiæ (excluding apex) ochraceous, abdomen above with the segmental margins narrowly testaceous, beneath more or less greyishly tomentose; membrane pale æneous, the venation and narrow apical margin fuscous-brown, basal and costal areas black; pronotum coarsely